ED 315 664 CE 054 811

AUTHOR Ross-Gordon, Jovita M.
TITLE Adults with Learning Disabilities: An Overview for the Adult Educator. Information Series No. 337.
INSTITUTION ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, Ohio.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE 89
CONTRACT RI88062005
NOTE 64p.
AVAILABLE FROM Publications Office, Center on Education and Training for Employment, 1900 Kenny Road, Columbus, OH 43210-1090 (order no. IN337: $7.00).
PUB TYPE Information Analyses - ERIC Information Analysis Products (071)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Adult Basic Education; Adult Education; *Adults; *Cognitive Processes; Cognitive Psychology; Coping; *Diagnostic Tests; *Educational Diagnosis; Independent Living; *Learning Disabilities; Neurological Impairments; *Psychoeducational Methods; Underachievement

ABSTRACT

Learning disabilities among adults are more prevalent than was once believed, although estimates of numbers are difficult to make. Problems faced by adults with LD include difficulties with academic and information processing and adult life adjustment. Many adults with LD exhibit strengths that enable them to compensate for their disabilities and function successfully without supportive services. Key issues in assessment include the following: (1) assessment should be a means of helping the adult live more fully; (2) formal diagnostic tools appropriate for use with adults should be used with caution; and (3) assessment should consider the adult's ability to provide information about strengths, weaknesses, and goals. The following principles guide selection of diagnostic instruments: (1) consult standard guides to measurement to determine whether test norms apply to adults; (2) read reviews of test reliability and validity; (3) consider whether timed tests are appropriate; and (4) use input from intake interviews to determine a test's relevance for individual goals and needs. Intervention approaches should take into account principles of adult learning. Policy concerns include increasing public and professional awareness; early intervention; training and staff development; a system of interinstitutional coordination of services; funding for assessment, diagnostic, and prescriptive services; and the impact on the family of an adult member with LD. Systematic research on LD causes, assessment, rehabilitation needs, and effectiveness of intervention approaches is needed. A comprehensive, holistic approach to assisting adults with LD should move away from a deficit focus and shift toward identifying talents, skills, and resources that can aid success in adult life. (184 references) (SK)

Information Series No. 337

ED315664

ADULTS WITH LEARNING DISABILITIES: AN OVERVIEW FOR THE ADULT EDUCATOR

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ERIC Clearinghouse on Adult, Career, and Vocational Education
Center on Education and Training for Employment
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Columbus, Ohio 43210-1090

1989

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FUNDING INFORMATION

Project Title:	ERIC Clearinghouse on Adult, Career, and Vocational Education
Contract Number:	RI88062005
Act under Which Administered:	41 USC 252 (15) and P.L. 92-318
Source of Contract:	Office of Educational Research and Improvement U.S. Department of Education Washington, DC 20208
Contractor:	Center on Education and Training for Employment The Ohio State University Columbus, Ohio 43210-1090
Executive Director:	Ray D. Ryan
Disclaimer:	This publication was prepared pursuant to a contract with the Office of Educational Research and Improvement, U.S. Department of Education. Contractors undertaking such projects under government sponsorship are encouraged to express freely their judgment in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official U.S. Department of Education position or policy.
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FOREWORD

The Educational Resources Information Center Clearinghouse on Adult, Career, and Vocational Education (ERIC/ACVE) is 1 of 16 clearinghouses in a national information system that is funded by the Office of Educational Research and Improvement (OERI), U.S. Department of Education. This paper was developed to fulfill one of the functions of the clearinghouse--interpreting the literature in the ERIC database. This paper should be of interest to adult education practitioners, researchers, policy makers, and students; developmental educators; and others interested in adult learning disabilities.

ERIC/ACVE would like to thank Jovita M. Ross-Gordon, Assistant Professor of Education, Pennsylvania State University, for her work in the preparation of this paper. She holds a doctorate in adult education and a master's degree in learning disabilities; she received the Helmer Myklebust Award as the outstanding M.A. student in the learning disabilities program at Northwestern University. Dr. Ross-Gordon has served as a learning disabilities teacher, diagnostician, and counselor in public and private school and university settings. Her published work includes studies of the learning and coping strategies used by adult basic education (ABE) students with learning disabilities; adult learning theories, learning styles, and learning disabilities; and ABE staff perceptions of learning disabled adults. Another focus of her work is multicultural populations in adult education.

The following people are also acknowledged for their critical review of the manuscript prior to publication: Dorothy Crawford, Chief Administrator, Research and Development Institutes, Inc.; Cheri Hoy, Associate Professor, University of Georgia; Jean Boston, Associate Director, ERIC Clearinghouse on Handicapped and Gifted Children; Susan Klein, Clearinghouse Monitor, OERI; and Margo V. Izzo and Nancy Puleo, Program Associates, the Center on Education and Training for Employment.

Publication development was coordinated by Susan Imel. Sandra Kerka edited the manuscript, and Janet Ray served as word processor operator.

Ray D. Ryan
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EXECUTIVE SUMMARY

People with genuine learning disabilities do not simply outgrow them. Learning disabilities among the adult population are more prevalent than was once believed. Current theories assume that the individual fails to learn because of some difficulty in processing information, and recent advances in brain research are beginning to verify a neurological basis for these difficulties. Additional causes may be behavioral, medical, or sociocultural. The disorder manifests itself in difficulties with attention, reasoning, processing, memory, communication, reading, spelling, writing, calculation, coordination, social competence, and emotional maturity.

How concerned should adult educators be with the possibility of learning disabilities (LD) among their clientele? Estimates of the number of people with LD are difficult to make. Extrapolating from the numbers of the school-served LD population and applying that figure to the total participating in adult education may result in an overestimate. Applying that figure to the number of adults served in ABE may result in an underestimate.

The problems faced by adults with LD fall into two categories. First are those academic and information processing difficulties that may persist from childhood: academic deficits, particularly in arithmetic, spelling, and written language, and language and cognitive processing problems. Another category is difficulties with adult life adjustment, such as living independently, handling money, and driving. Socioemotional problems such as low self-esteem, anxiety, and poor interpersonal skills may arise from faulty interactions with the environment. Marriage, family life, and job success may also be affected. However, it should be noted that many adults with LD exhibit strengths that enable them to compensate for their disabilities and function successfully without supportive services.

Key issues in the assessment of adults with LD include the following:

- Assessment is useful to the extent that it provides a means of helping the adult live more fully.

- Formal diagnostic tools appropriate for use with adults are scarce, and such tools should therefore be used with caution.

- Clinicians should take into account the adult's ability to provide information about personal strengths, weaknesses, and goals.

A number of abbreviated procedures, such as checklists, have been suggested for screening purposes. However, this process runs the risk of inappropriate diagnosis of LD. More

useful are procedures for comprehensive diagnostic evaluation that take into account detailed client history, behavioral observation, school records, and results of objective testing.

Principles to guide selection of diagnostic instruments include the following:

- o Consult standard guides to measurement to determine whether test norms apply to adults.
- o Read reviews of test reliability and validity.
- o Consider whether timed tests are appropriate for older adults who may have slower perceptual ability.
- o Use input from intake interviews to determine the relevance of a test for an individual's goals and needs.

Intervention approaches should go beyond remedial instruction and take into account principles of adult learning. Alternatives include remedial approaches (such as in ABE and literacy settings), compensatory programs (often found in secondary, college, and vocational training settings), tutorial intervention, and adaptive functioning programs (survival skills, workplace literacy). Multidimensional programs may provide the most comprehensive service to adults, involving a team of educational psychologists, LD specialists, rehabilitation counselors, and adult educators.

Policy development for working with adults with LD is hampered by disagreement over definitions, assessment tools, and intervention techniques, as well as lack of empirical validation. However, the price of failure to provide adequate services is high. The following policy concerns must be addressed:

- o Increasing public and professional awareness
- o Providing early intervention
- o Funding training and staff development for adult educators, counselors, and administrators
- o Establishing a system of interinstitutional coordination of services
- o Allocating necessary funds to develop and deliver assessment, diagnostic, and prescriptive services
- o Considering the impact on the family of an adult member with LD

Systematic research on LD causes, assessment, rehabilitation needs, and effectiveness of intervention approaches is needed. Attention must be paid to problems that can hinder the quality of research, such as sample selection and use of questionable screening procedures.

A comprehensive, holistic approach to assisting adults with LD should move away from a deficit focus and shift toward identifying talents, skills, and resources that can aid success in adult life. The adult with LD is a critical member of the team in achieving this goal.

Information on adults with learning disabilities may be found in the ERIC system using the following descriptors: Adult Basic Education, Adult Education, *Adults, *Cognitive Processes, Cognitive Psychology, Coping, *Diagnostic Tests, *Educational Diagnosis, Independent Living, *Learning Disabilities, Neurological Impairments, *Psychoeducational Methods, Underachievement. Asterisks indicate descriptors having particular relevance.

INTRODUCTION

Each of us possesses certain learning strengths and weaknesses. Recently, this intuitive awareness has been studied at a formal level in the research on left-brain, right-brain learning and on multiple intelligences (Gardner 1983). For most of us, these variable patterns in our learning do not represent a barrier. We tend to gravitate toward work that allows us to use our strengths, and our choices of certain social, cultural, and recreational activities are likely to be influenced by both our interests and our abilities. We give relatively little thought to our areas of learning weakness unless a specific incident brings them to mind. Such experiences often lead us to avoid the circumstance related to such incidents or to compensate by depending on other people or on technological aids. Those who are not strong in areas of gross motor and perceptual motor abilities may avoid athletic activities, welcome word processors as a substitute for handwriting, and spend more time than others learning those motor skills that are essential. We do not come to think of ourselves as disabled in our learning, nor do others label us so.

For many adults, however, difficulty in certain domains of learning leads to impaired performance in academic, occupational, or social contexts. When difficulties are in areas that handicap school performance, many of these individuals will have received special educational services. Some, depending on age and a variety of circumstances, will have been categorized during childhood as having learning disabilities (LD). Those whose difficulties are less severe or whose compensatory behavior helped them go unnoticed may arrive in adult education programs without any such categorization; nonetheless, their learning disabilities are real.

The adult with learning disabilities is a timely focus for professionals in several fields of educational study and practice. The maturation of many young people identified within the school systems since the 1964 origin of the field of learning disabilities has spurred an interest in the adult with learning disabilities. It has also become apparent that many adults who attended school when special education was not widely available share some of the learning characteristics of those who have been identified by the schools. The need for educational services of both of these segments of the adult population has received attention from special educators, vocational rehabilitation counselors, higher education professionals, and, more recently, adult and vocational educators. This monograph has been prepared primarily with an audience of adult educators in mind. However, it becomes increasingly apparent that effective delivery of educational services to adults with LD requires cooperation and exchange of knowledge among professionals in all of the fields mentioned here. Therefore, the author hopes that the manuscript will also be useful to those in special education,

higher education, vocational education, and vocational rehabilitation who have an interest in adult education perspectives on the adult with LD.

A brief monograph cannot effectively review all that is available in the growing body of literature on this topic. Because the manuscript is prepared for the ERIC Clearinghouse on Adult, Career, and Vocational Education and because literature on young adults in higher education has been reviewed in several other sources (Mangrum and Strichart 1984; Vogel 1985), the needs of and interventions for LD students in higher education are only infrequently mentioned here. Since the literature has grown in sophistication and expanded significantly during the 1980s, emphasis is given to what has been reported during that decade. To provide an overview of the range of information available, a variety of published sources were used. These sources include conceptual discussions of the topic, program descriptions, anecdotal case studies, final reports of funded programs, and more formal research. A number of these materials have not appeared as publications outside the ERIC system. In a few cases, reference is also made to unpublished materials obtained from directors of programs or projects.

Rigorous research is still relatively scarce, and that which exists is difficult to compare because of the tremendous diversity in samples, identification procedures, and research design. Although the intention is to report research that specifically includes a learning disabled population described in a manner that is consistent with major definitions, occasional reference is made to literature using different terminology for a population described in a manner consistent with the definition. For example, several follow-up studies on hyperactive children appear as classics in the literature on adults with LD. As will be evident in the discussion, continuing debates over definitions, assessment procedures, and intervention approaches for youth with learning disabilities complicate the study of adult populations who have been previously identified. Newer debates over the necessity for labeling during adulthood, appropriate assessment procedures, and priorities for service during adulthood create additional challenges to studying adults not earlier identified as having learning disabilities.

The reader is invited to accept the challenge of moving forward with what little information really exists about the adult with learning disabilities. These adults command our attention, and our responses to them may provide models for educational services to other, less sizable populations of adults with disabilities.

Origin and Definitions of Learning Disabilities

Conceptually, the term "learning disabilities" is best distinguished from the more generic term "learning problems." Some use the adjective "specific" in conjunction with learning disabilities to make this distinction. Adult learning problems stem from a variety of sources. Some of these problems are intrinsic to the learner, including diminished sensory acuity, limited intellectual ability, acquired brain injury, emotional disturbance, chemical dependency, and lack of motivation to learn. Other sources of difficulty, including ineffective instruction, limited exposure to necessary background knowledge, and environmental stresses, are external to the learner. Historically, the term "learning disabilities" has been used to describe

a heterogeneous group of learning difficulties unexplained by these criteria.

Although the neurological bases of language and reading disorders had been discussed as early as the late 19th century, the roots of the modern field of learning disabilities are found in the work of Alfred Strauss and his colleagues who originally studied World War II brain-injured veterans as well as children with known brain injury (Goldstein 1942; Strauss and Lehtinen 1955; Strauss and Werner 1942). They later extended their research to children manifesting learning patterns similar to those of the brain-injured population, while exhibiting only soft (behavioral) signs of neurological disturbance. Laura Lehtinen (Strauss and Lehtinen 1955) may have been the first to use the terms learning and disability together in referring to this population, but it is Samuel Kirk (1962) who is credited with establishing the term as a category of special education.

Most definitions of learning disabilities have emphasized three elements: (1) a discrepancy between ability and performance, (2) an absence of other primary handicapping conditions, and (3) factors intrinsic to the individual (Johnson and Blalock 1987). Although many theories of learning disability have competed over the years (Kavale 1988; Lynn, Gluckin, and Kripke 1979), the prevailing theories have incorporated the assumption that the individual fails to learn because of some difference in information processing, a difference with a presumably neurological basis. The difficulty of demonstrating a biological basis for presumed neurological disturbance has plagued the field of learning disabilities since its inception, leaving the door open for criticism of tests said to measure the cognitive manifestations of such disturbance and inviting the operational definition of learning disabilities as unexplained underachievement. Recent advances in brain research have substantiated the neuropsychological theory of learning disabilities (Galaburda 1985), although common assessment procedures do not permit the verification of a neurological basis of individual learning disabilities. Alternative theories of learning disabilities have emphasized behavioral, information processing, medical, or sociocultural causes (Adelman and Taylor 1986; Carrier 1986; Lynn, Gluckin, and Kripke 1979).

Torgesen (1986) identified three dominant paradigms guiding LD research and theory during the 1980s. He maintained that the assumptions underlying the neuropsychological model must be regarded as a working hypothesis unless new advances in technology provide better experimental methods for investigating the relationship among neurology, processing, and learning. A second paradigm builds on the science of cognitive psychology, assuming that learning disabilities result from a failure in information processing, particularly at the level of strategic processing. Torgesen pointed out the limits of this model in explaining behavioral change, but saw the emphasis on interactions between processing skills and task requirements as fruitful for theory development. Finally, the applied behavior analysis paradigm assumes that learning disabilities result from a lack of properly reinforced practice or from inappropriate learned responses. Although research on the effectiveness of remediation based on this paradigm has often been positive in outcomes, Torgesen noted that most successes have been in terms of isolated, narrowly defined skills. He suggested that rather than adopting a single framework, researchers need to clarify the unique ways each paradigm contributes to the

understanding of individuals with learning disabilities.

Because no single definition of the term learning disability governs practice regarding the adult with LD, several definitions are given here. The federal definition of learning disabilities emphasizes both a presumed neurological basis and the exclusion of other known causes of learning disorders. That definition, found in the 1977 *Federal Register* guideline to implementation of P.L. 94-142, the Education for All Handicapped Children Act, was accepted after a lengthy process of attempting to establish the common ground in discussions of learning disabilities in the 1960s and 1970s. It reads as follows:

> The term "specific learning disabilities" means those children who have a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, or mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage. (U.S. Office of Education 1977, p. 65083)

In recent years, a definition proposed in 1981 by a joint committee representing six professional fields concerned with learning disabilities has gained increasing acceptance, though not official sanction. Although still emphasizing that the learning disability is intrinsic to the individual, this definition deemphasizes the medical terminology and leaves room for the coexistence of learning disabilities and other handicapping conditions:

> Learning disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunctions. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g., cultural differences, insufficient/inappropriate instruction, psychogenic factors), it is not the direct result of those influences. (Hammill et al. 1981, p. 336)

Each of these definitions, developed to describe children with LD in academic contexts, has limitations when used to describe adults with learning disabilities. The definition accepted since 1985 by the Rehabilitation Services Administration gives more attention to the possibility of nonverbal disorders and adds adult dimensions of social competence and emotional maturity:

> A disorder in one or more of the central nervous system processes involved in perceiving, understanding, and/or using concepts through verbal (spoken) or written language or nonverbal means. This disorder manifests itself with a deficit in one or more areas: attention, reasoning, processing, memory, communication,

reading, spelling, writing, calculation, coordination, social competence, and emotional maturity. (Rehabilitation Services Administration 1985, PPD-85-7)

Finally, the assembly of delegates of the Association for Children and Adults with Learning Disabilities, an organization of professionals, parents, and clients with LD, approved the following definition in 1986:

> Specific learning disabilities is a chronic condition of presumed neurological origin which selectively interferes with the development, integration, and/or demonstration of verbal and nonverbal abilities.
>
> Specific learning disabilities exists as a distinct handicapping condition and varies in its manifestations and in degree of severity.
>
> Throughout life the condition can affect self-esteem, education, vocation, socialization, and daily living activities. ("ACLD Description" 1986, p. 15)

This definition stresses the lifelong impact of the learning disability and its intrusion into multiple aspects of adult learning and living including independent living, interpersonal relationships, self-esteem, and occupational success.

Who Is an Adult?

A consideration of the education of adults with learning disabilities necessitates some attempt at defining who is an adult and what is meant by adult education. Legally, the adult is defined in many different ways, depending on the responsibility or privilege considered. In special education, for example, young people are considered eligible for school-system supported services until they are 21. As various contexts for adult and vocational education are examined, it becomes increasingly difficult to determine appropriate age limits.

Within the field of adult education, an adult has often been considered as one who is functioning sociologically (in the eyes of society) and psychologically (according to self-perception) in the roles associated with adulthood. Typically, it is assumed that such persons are responsible for themselves and often for others. This assumption can be problematic if applied to the person whose disabilities, lack of preparation, and unemployment or underemployment prevent independent living. It is also typically expected that the client of adult education programs will have left formal preparatory schooling and performed in other full-time roles for at least some period of time. For adult basic education purposes, an out-of-school youth of 17 may meet these criteria. Although many authors writing about adult learning disabilities refer to traditional-age college students in college LD programs, few professionals in adult education would consider them "adults" for the purposes of counting them as part of adult education programs. Typically, a nontraditional age such as 25 or a set number of years away from school before reentry is applied to determine a target audience for adult programs in higher education. Thus, the age at which a person with LD is considered to be a part of the adult education system may vary depending on the educational context.

What Is Adult Education?

Many recent discussions of the adult with learning disabilities refer to adult education only in the context of adult basic education programs. This practice may occur in part because adults with LD who have major academic skill deficits are likely to come in contact with that particular part of the adult education enterprise. This usage may also be partially explained by the popular use of related terms such as continuing education, continuing professional education, and lifelong learning, which are sometimes perceived to be quite distinct from adult education. Finally, restriction of the federal Adult Education Act (1966) to provisions for remedial adult education to complete schooling and prepare for work leads many outside the field to assume that adult education is in fact only those programs so designated through federal and state funding. Currently, however, professionals in the field use the terms adult education or adult and continuing education to refer to a broad class of adult learning activities occurring in a wide variety of settings.

A look around most communities reveals, in fact, many other adult education programs. Some, such as the public school-based community and adult education programs, operate under that title. Other adult education programs exist under different titles, such as continuing education and public service (in the community college), training and development (in industry), religious adult education, and military education. A look at the list of units of the American Association for Adult and Continuing Education reveals the tremendous diversity of agency-sponsored adult education programs. Most adult education scholars today accept a definition that also extends beyond education in these formal and nonformal settings. Self-education efforts occurring alone or in groups are typically considered legitimate areas of adult education today if they reflect systematic and intentional efforts to learn (Cross 1981; Tough 1979). This paints a considerably broader picture for considering the adult education needs of adults with learning disabilities.

Prevalence of Learning Disabilities among Adults

How concerned should adult educators be with the possibility of learning disabilities among their clientele? The absence of data in this area makes answering such a question difficult. Kavale (1988) observed that at the time P.L. 94-142 was written (1975), it was suggested that as much as 2 percent of the school population had learning disabilities. By the 1983-84 school year, the percentage of school-age students served as learning disabled rose to 4.57 percent--42 percent of those in special education programs (Hallahan, Keller, and Ball 1986). It is difficult to determine how accurately these figures reflect the actual prevalence of learning disabilities in school-age children, with most estimates ranging from 2-15 percent (Adelman 1979). Some suggest that LD is overidentified in the schools, with underachievement routinely being called learning disability (Algozzine and Ysseldyke 1986). Others maintain that LD is underidentified in school settings because of the application of stringent ability-achievement discrepancy formulas intended to hold down the numbers. Analyses of identification processes used by schools suggest that many social, legal, and organizational factors impinge on diagnosis, and certain types of students may be more likely than others to be

identified in particular settings (Carrier 1986; Ysseldyke et al. 1983).

Estimating the number of individuals with specific learning disabilities in the adult population is even more difficult. One way to estimate the extent of learning disabilities in the adult population is to extrapolate the most recent figures on LD reported among school children. Thus, one might assume that 4.84 percent of adults have learning disabilities, extrapolating from figures on the school-served LD population in 1987 (Stern and Chandler 1988). This figure could be applied to get several estimates. If applied to the total number of adults participating in adult education (Snyder 1988), an estimated 1,127,865 of the 23,303,000 adults participating in 1984 might have learning disabilities. In fact, because better educated adults are more likely to participate in adult education programs (Carp, Peterson, and Roelfs 1974; Snyder 1988), this figure would probably yield an overestimate for that population. Extrapolating that 4.84 percent of the adults served in adult basic education (ABE) have learning disabilities would probably result in an underestimate, since those adults participating in ABE and general educational development (GED) programs are more likely to have experienced school failure. Assuming that 4.84 percent of the adult population, or 11,683,200 adults, have learning disabilities, there is no way to determine the relevance of that figure to adult education programming, since adults with LD are probably more likely than other adults to be among current nonparticipants in adult education and to be unevenly distributed across a variety of adult education programs.

PROBLEMS FACED BY ADULTS WITH LEARNING DISABILITIES

Is it necessary to identify and provide services to adults with LD? Lieberman (1987) discussed the issue of whether learning disabilities are relevant only to school-based learning or whether they also affect adult learning in ways requiring intervention. Numerous studies have suggested that learning disabilities do persist into adulthood and that they do affect many aspects of adult life (Gottfredson, Finucci, and Childs 1984; Horn, O'Donnell, and Vitulano 1983; Johnson and Blalock 1987). There is evidence that the impact of learning disabilities is manifested during adulthood in continuing academic deficits (Johnson and Blalock 1987; Rogan and Hartman 1976), language and nonverbal processing problems (Johnson and Blalock 1987), vocational training and employment problems (Biller 1985, 1987; Brown 1984; Chesler 1982; Cummings and Maddux 1985; Fafard and Haubrich 1981; Geist and McGrath 1983; Lean 1983; White 1985) and social and family living problems (Cummings and Maddux 1985; Johnson and Blalock 1987; Kroll 1984; Lenkowsky and Saposnek 1978).

However, it is also important to note that adults with LD exhibit learning strengths that permit many of them to compensate skillfully for their learning disabilities (Barsch 1981; Johnson and Blalock 1987; Ross 1987; Smith 1985); they escape unnoticed in adult life and require no help from well-meaning professionals. Some have alleged and others disputed that great historical figures such as Thomas Edison, Albert Einstein, Woodrow Wilson, and Auguste Rodin achieved great fame despite supposed learning disabilities (Adelman and Adelman 1987; Thompson 1971). Some young adults who have received services in the past welcome or even depend on the kind of support attached to their label; others want no part of the label and avoid association with programs for the learning disabled, even if such avoidance means sacrificing helpful services. Some adults not previously identified may chafe at the suggestion that they have a learning disability, whereas others refer themselves for testing to gain a better understanding of their learning difficulties. Obviously, there is no simple answer to the question whether specialized services are needed by the learning disabled adult. Need for services ultimately depends on the individual and his or her life circumstances and aspirations.

This section examines some of the challenges to learning that are faced by adults with learning disabilities. It is divided into two parts. The first part focuses on those academic and information processing difficulties that may persist from childhood, sometimes with new dimensions surfacing in adulthood. The focus of the second part is on problems developmentally associated with adulthood (Patton and

Polloway 1982) and thus not manifested earlier.

Persistent Academic and Processing Problems

The body of literature described as longitudinal or follow-up studies of adults with LD varies greatly. Early longitudinal studies report follow-ups of individuals identified before the term learning disability came into usage; thus, the individuals were identified as hyperactive, reading disabled, or brain damaged as children (Horn, O'Donnell, and Vitulano 1983; Mann and Greenspan 1976; Silver and Hagin 1964). From the retrospective descriptions, it is often difficult to be certain whether the adults would have been identified as learning disabled under current assessment procedures. More recent studies continue to vary considerably in means of identification, socioeconomic backgrounds of the students, type of educational setting in which the students were identified and educated, use and type of control groups, aspects of adult functioning measured, and follow-up procedures. The inconclusive or contradictory results across studies are difficult to interpret.

Observing the variability in socioeconomic status (SES) of samples, with some of the most optimistic adult status reports coming from adults who grew up in middle- to upper-middle class families, O'Connor and Spreen (1988) conducted an analysis of the effects of several variables associated with parental SES on seven outcome variables. They found that father's employment and father's education each explained respectively 16 and 20 percent of the variance in outcome variables associated with educational attainment and employment. The best predictors of outcome variables were IQ (at ages 10 and 25) and presence of neurological signs at age 25. The SES variables, however, explained a greater proportion of the variance in outcome variables than did the presence of hard (physical) or soft (behavioral) neurological signs at age 10. O'Connor and Spreen suggested that parental SES should thus be considered a factor in interpreting differences across studies and should be included as a control variable in future studies.

Academic Deficits

Underachievement in the area of basic academic skills is apparent in many cases. In two follow-up studies, Frauenheim (1978) and Frauenheim and Heckerl (1983) found that a group of 40 adults diagnosed as learning disabled at a mean age of 11 years, 6 months showed persistent and severe academic deficits when tested at a mean age of 21 years, 10 months. From the original sample, 11 were also available for a follow-up at age 27. This group of adults still scored consistently below the fourth-grade level in reading despite having received special reading help. In a multistate study of the needs of learning disabled adults, Hoffmann et al. (1987) reported that 65 percent of the 381 adults with LD identified through vocational rehabilitation services perceived spelling to be a problem and 63 percent perceived reading as a problem. Of these adults, 47 percent perceived arithmetic to be a problem, 41 percent reported difficulties with written composition, and 33 percent reported handwriting problems. Buchanan and Wolf (1986) reported the results of achievement testing of 33 adults who were referred to a private psychoeducational consulting group. Written language was

the area in which the greatest proportion of the subjects exhibited disability, with 52 percent of males and 66 percent of females considered disabled in written language based on results of the *Woodcock-Johnson Psychoeducational Battery* (Woodcock and Johnson 1977). Perlo and Rak (1971) provided remediation for periods of 3-20 months in the areas of reading and written language to 50 adults. They suggested that the spectrum of language disability in adults ranged from the total nonreader to the adult whose spelling problems are the only residual of earlier reading problems.

Johnson and Blalock (1987) found a variety of achievement deficits in a heterogeneous adult clinic population of 65 men and 28 women ranging in age from 17 to 48. A few had problems confined to spelling and written language; classic dyslexics had difficulty in reading and spelling, often manifesting no other learning disabilities; still others had reading and writing disorders related to more generalized problems in conceptualization or language. Achievement deficits specific to mathematics were also found in a group of adults who exhibited nonverbal problems in the visual-spatial or quantitative domain. These findings of persistent deficits in basic skills in adults with no established record of prior remediation are consistent with findings in some follow-up studies of individuals with LD who received remediation in school. Frauenheim (1978) reported mean achievement grade equivalents of 3.6 in reading, 2.9 in spelling, and 4.6 in arithmetic for 40 young adults, with consistency even in the nature of reading problems experienced. Deshler et al. (1982) reported that skill-level plateaus at the 5th-grade level for reading and 6th-grade level for math may be common by the time students with LD reach 10th grade. As Frauenheim suggested, the intractibility of achievement deficits in some follow-up populations may be a function of the severity of problems that caused them to be diagnosed at an early age, and the prognosis for improvement may in fact be better than earlier thought for some previously unserved adults. Current assessment of academic performance seems to be vital to predicting the difficulties likely to be faced by adults with LD pursuing further formal education.

Language and Information Processing Problems

Although academic skill deficits are often more likely to cause an adult to seek help with a learning disability, residual problems in language skills, nonverbal processing, and general information processing have also been described. Johnson and Blalock (1987) noted that some clients' problems in reading comprehension, written expression, and mathematical reasoning in fact indicated primary deficits in language comprehension. They typically had higher performance intelligence and exhibited strengths in arts, graphic design, or mechanics. Others came for assistance in reading, but also had problems in expressive language--difficulty with word retrieval, syntax, pronunciation of multisyllabic words, and morphosyntactic spelling errors. Many of these individuals had finished high school and tried college, but gave up in frustration. They tended to learn a lot from listening and observation. Another subtype observed by Johnson and Blalock requested help for handwriting and arithmetic, yet had generalized difficulty with nonverbal, visual-spatial processing. They had difficulty with everyday living skills and job tasks requiring visual analysis, synthesis, or manipulation (for example, poor sense of direction, poor

organization, difficulty aligning buttons and holes, difficulty organizing to cook a meal). Another subtype presenting few academic problems and frequently among the brightest adults seen in the Northwestern University adult clinic had disorders in organization, planning, and attention. They failed to realize their potential because of poor planning and inability to prioritize activities. They often had poor self-monitoring skills, failed to detect mistakes, and reported difficulty with attention and overload.

Evidence of persistent information processing problems comes from several other sources as well. Brown (1984) noted that information processing or motor execution problems can affect job performance, leading to difficulties with following directions (auditory memory), arriving on time (temporal orientation), interacting with co-workers (social perception), and clumsiness (perceptual motor). Hoffmann et al.'s (1987) needs assessment of adults with LD identified the following information processing and output areas as presenting problems for a proportion of the 381 adults surveyed:

- Memory -- 30 percent
- Listening -- 18 percent
- Coordination -- 16 percent
- Visual perception -- 14 percent
- Thinking -- 13 percent
- Talking -- 12 percent
- Auditory perception -- 10 percent

Hasbrouck (1983), although using some tests designed for children, substantiated the presence of problems in auditory memory for noncontextual speech, contextual speech, and directions for fine motor tasks; auditory figure-ground and auditory discrimination for sequences of sounds, auditory closure, and auditory discrimination of words among 24 previously undiagnosed adults referred to a hospital speech and hearing clinic. These adults reported such complaints as difficulty understanding conversations on the phone, difficulty remembering directions, difficulty sequencing tasks appropriately, difficulty learning a foreign language, and/or difficulty reading, spelling, and/or writing. Deshler et al. (1982) also observed persistent deficits in cognitive processing functions such as monitoring, planning, and rehearsal among low-ability adolescents with LD. They suggested that failure to use active information processing strategies may be a function of lowered intrinsic motivation to perform, as well as delayed development of such skills.

Adult Life Adjustment

Although academic skills deficits and information processing difficulties may persist into adulthood, their effects on independent living, interpersonal relationships, and career choice and development often have the greatest impact on the lives of adults with learning disabilities. In addition to research focusing on the adult outcomes of children previously diagnosed with learning disabilities, the literature contains several other approaches to describing the life adjustment of adults with LD. Samples have been drawn from clinic populations (Buchanan and Wolf 1986; Johnson and Blalock 1987; Perlo and Rak 1971), job training programs (Alley et al. 1982), and army enlistees (Harnden et al. 1981). Individual case studies have also been used to illustrate the problems of the adult with learning

disabilities (Cox 1977; Idol-Maestas 1981; Lenkowsky and Saposnek 1978). Needs assessments have been conducted to determine perceived needs of adults with LD according to the adults themselves, parents of adults with LD, and professionals (Chesler 1982; Clitheroe, Hoskings, and Salinas 1988; Hoffmann et al. 1987). Finally, some reports of the needs of adults with learning disabilities are based on a blend of clinical experience and interpretation of literature (Barsch 1981; Cummings and Maddux 1985; Hill 1984; Kroll 1984; Polloway, Smith, and Patton 1984). It should be noted that part of the variability in descriptions of problems of adults with LD can be attributed to the heterogeneity of the population. It should certainly not be assumed that each individual with LD will possess all of the problems discussed here.

Life Adjustment Needs

Chesler (1982) surveyed 560 adults with LD identified through the Association for Children with Learning Disabilities and found the following rank order of needs for assistance:

1. Social relationships and skills
2. Career counseling
3. Developing self-esteem
4. Overcoming dependence
5. Vocational training
6. Job getting and keeping
7. Reading
8. Spelling
9. Management of personal finances
10. Organizational skills

Academic problems were rated low relative to needs for social and occupational competence. In a smaller-scale needs assessment, Clitheroe, Hoskings, and Salinas (1988) surveyed 100 California adults and found vocational skills to be the most important perceived need. This result was not surprising in a sample of which 62 percent were living with parents and 47 percent were unemployed. Concern for vocational skills was greatest for those over 35, whereas social skills replaced vocational skills as the greatest educational need among those who were employed.

Overall Status of Adults with Learning Disabilities

Despite possible persistent academic problems, a number of follow-up studies indicate either positive or mixed outcomes in various areas of adult functioning. A recent study examined the post-school status of 100 young adults (mean age 22.2) from upper-lower to lower-middle socioeconomic status families who had been identified as having LD while enrolled in public schools in Alabama; some had received services and some had not (Cobb and Crump 1984). Although almost half failed to graduate from high school and only a few had completed a GED program, only 5 percent reported they experienced problems reading as adults. Nearly 90 percent were employed, in jobs ranging from low-level managerial/technical jobs to janitorial and stock handler jobs. Although the majority of respondents earned less than $10,000, they reported moderate satisfaction in their jobs. The 45 percent who were married

accounted for most of those no longer living at home. Similarly mixed results have been reported by several other investigators (Fafard and Haubrich 1981; Obringer and Isonhood 1986; White et al. 1982).

Obringer and Isonhood (1986) conducted a follow-up study of 25 young adults previously enrolled in LD classes. Of these individuals, 60 percent completed a high school diploma and 35 percent completed 1-3 years of college. Although 72 percent were employed full time, most were employed at clerical, semiskilled, or unskilled jobs that they found through family or friends, with wages equally distributed in the minimum wage range to $8.00 an hour. Although 24 percent still held their first job and another 28 percent had held no more than 2 jobs, 16 percent had held 5-6 jobs since stopping school. Positive indicators of adult functioning are reflected in the following statistics: 100 percent had driver's licences, 92 percent had minor or no traffic violations, 76 percent owned a car, 72 percent were dating, 64 percent were registered to vote, and 64 percent had savings accounts. The authors concluded that this sample was adequately adjusted although somewhat underemployed and dependent on family and close friends. More consistently positive outcomes have been identified by several investigators reporting on middle-class learners with relatively high mean IQs. Rawson (1968) followed 56 students from a private school in Pennsylvania, using retrospective analysis of school records to identify 20 as dyslexic. She found that this sample exceeded their fathers' post-high school educational attainments, with a mean of 6.02 years of education beyond high school. None was unemployed, and occupations ranging from physicians, college professors, and lawyers to skilled laborers were represented.

Noting that virtually no follow-up LD research included significant numbers of women, Goodman (1987) conducted a follow-up study of women who had been clients of a reading clinic as girls. The outcomes for the middle- to upper-class girls, primarily of high average or better IQ, were comparable in several areas to those of their non-LD sisters. These women were similar to their sisters in educational and professional attainment, were just as likely to be married with children, and were no more likely to seek counseling services. Contrary to accounts of the disorganized adult with LD, they were for unexplained reasons engaged in a greater number of simultaneous roles than were their sisters, roles that included motherhood and work at age 30, or student and volunteer roles at ages 25, 30, or 35. The sisters with LD recalled education as a difficult and less enjoyable process and were more likely to have chosen education and human service careers, as opposed to the math, science, and writing careers more often chosen by their sisters, at age 25. The career difference seemed to disappear with age. Contrary to the expectations of the researcher, women with learning disabilities did not differ significantly from their sisters in self-esteem or sense of mastery.

Independent Living

Living independently is a transition task associated with adulthood. Variability in ages and employment status of samples of adults with LD and a growing trend among young people to remain at home may mask reasons for such dependent behavior among adults with LD. Spreen (1988) found that students with LD who

exhibited soft (behavioral) neurological signs or no signs left home at an earlier age than did control group students or students with LD who had hard (physical) neurological signs; he conjectured that control group students were more likely to be still at home while attending college. Although comparison figures on "normal" populations are generally less readily available, there is substantial evidence that 50 percent or more of young adults with LD remain in their parents' homes for some years after stopping high school (Clitheroe, Hoskings, and Salinas 1988; Cobb and Crump 1984; Obringer and Isonhood 1986).

Among the independent living responsibilities perceived to be a problem by the adults with LD in Hoffmann et al.'s (1987) study were handling money (30 percent), solving arithmetic problems (47 percent), and driving (18 percent). Service providers in the same study agreed in their perceptions that adults with LD had problems with money and banking (58 percent), but also perceived problems in keeping track of time (33 percent), a set of problems that was not identified by adults with LD.

Johnson and Blalock (1987), basing their discussion largely on the study of an adult clinic population, described a variety of difficulties in daily living and independence as they relate to specific kinds of learning disabilities. Adults with sequencing difficulties and reversal tendencies reported trouble with telephone numbers, addresses, and numbers on buses and trains. Those with math disorders were often at the mercy of waiters and sales clerks, or they faced difficulty using measuring devices, reading thermometers and gauges, and using rulers. Individuals with reading and writing problems faced a myriad of problems including completing applications, writing checks, and writing letters. Those with visual-spatial disorders found it difficult to learn to drive, to ride bikes, or even to walk around, as they often failed to recognize familiar landmarks. For this group, even activities as seemingly simple as putting clothes on a hanger, packing a box, or wrapping a package can pose a problem. Finally, the authors noted that adults with problems in organizing and planning experience pervasive difficulties that may be manifested in such ways as forgetting appointments and errands or losing things.

Cummings and Maddux (1985) speculated that adults with LD may have difficulty with independent living due to a range of problems in such areas as budgeting, laundry skills, household maintenance, using bus schedules or maps for transportation, and cooking. They suggested that parents should understand the negative effects of overprotecting children with LD and make every effort to teach self-help skills and encourage independence from an early age. For some individuals, they suggested transitional living facilities, such as those available at the R & D Independent Living Center in Phoenix, Arizona (Scheiber and Talpers 1987). Jackson (1988) studied adults with nonverbal learning disabilities to learn more about the impact of this subtype of learning disabilities on an individual's ability to attain independence. A multiple comparison case study of two men and two women indicated that these adults had little concept of independence and strongly resisted attempts to have them accept adult responsibilities. All aspects of their lives were intertwined with the dynamics of their family units.

Socioemotional Status

Schulman (1984) noted that many adults with LD seek psychotherapy for anxiety, depression, low self-esteem, poor interpersonal skills, or problems with intimacy, but he observed that many psychotherapists are unprepared to deal with the psychodynamic implications of learning disabilities. A disability that remains hidden for a long time can have profound effects on personality development even before it is discovered. He suggested that individuals with LD may as children have difficulty learning to trust an environment that seems unpredictable, uncontrollable, and dangerous. Fear, anxiety, and dependence may arise from faulty interactions with the environment that are in turn influenced by faulty perceptions of the environment. The compensatory tactics developed by the time the individual reaches early adulthood may include a variety of personality defense mechanisms.

Although these observations are based on clinical impressions of a help-seeking segment of the LD population, they may or may not accurately describe the general population of adults with LD. In a review of literature on the social and personal characteristics of adolescents with LD, Seidenberg (1987) noted a number of contradictory findings. Although she cited several studies indicating that such adolescents get along fine with their peers and exhibit positive self-esteem, a number of other studies show that adolescents with LD experience a variety of social problems, feel a limited sense of control over positive life outcomes, and exhibit negative self-concepts.

Similarly, the limited research on social and psychological adjustment of adults with LD produces mixed findings. Anecdotal descriptions of LD adult difficulties include reference to isolation and loneliness (Cummings and Maddux 1985) and social skills problems at work (Brown 1982). A needs assessment (Chesler 1982) conducted with adults with LD indicated that social relationships and skills ranked first and developing self-esteem ranked third in a list of 10 personal priorities. Rogan and Hartman (1976) found that the Cove School graduates they evaluated as adults exhibited group patterns on the Minnesota Multiphasic Personality Inventory (Hathaway and McKinley 1967) characterized by low self-esteem and difficulty tolerating tension. However, they also found these personality traits to be balanced to some extent by the adults' persistence, strong achievement motivation, and willingness to work hard. White et al. (1982) found students with LD to be less active in social and recreational activities and community involvement than were those in a non-LD comparison group. In contrast, Goodman (1987) found that women with LD were engaged in community volunteer work at levels equivalent to those of their control group sisters. They also found no differences between the women with LD and their sisters in levels of self-esteem.

How can these variable results be explained? Variability in samples, methods, and instruments used for measurement may account for a significant portion of the variance. The heterogeneity of the LD population is another possible explanation. Just as individuals with LD may exhibit a variety of combinations of strengths and weaknesses in other areas, so too they may exhibit variability in skill and attitude development associated with psychosocial adjustment.

Seidenberg (1987) suggested that a better understanding of social and personal characteristics of individuals with LD requires more sophisticated analyses of these variables in relation to LD subtypes than are currently being conducted. Johnson and Blalock (1987) in fact described a variety of social difficulties (mentioned by 25 percent of their clinic population) associated with specific language, reading, perceptual-motor, or nonverbal thinking disorders. Based on their examples, one could explain the difficulties a person with LD might face at a social reception in any of several ways. The person might misinterpret jokes due to language reception problems, might not talk much due to expressive language problems, may feel left out of the conversation because of difficulty reading the books and articles everyone is discussing, or may misinterpret interaction patterns due to nonverbal thinking disorders.

In an effort to determine personality subtypes among young adults with LD and to determine relationships between personality patterns and LD subtypes, Leicht (1987) administered the Psychological Screening Inventory (Lanyon 1978) to 152 applicants to a college support program for students with LD. Cluster analysis yielded six subtypes: (1) Extraverted Nonconformist-Alienated, (2) Defensive/ Low Discomfort, (3) Alienated Distressed Nonconformist, (4) Well-Adjusted, (5) Alienated-Introverted, and (6) Extraverted Nonconformist-Distressed. The two most maladjusted personality styles (3 and 5) were associated with low achievement motivation. Seidenberg (1987) cautioned that social problems may not reflect specific learning disabilities but rather affective motivation problems--when individuals with LD have lost the feeling of efficacy in controlling social outcomes, their low motivation may affect social behaviors. No relationships were found, however, between personality subtypes and neuropsychological subtype or between severity of maladjustment and probability of neuropsychological dysfunction. The author concluded that the cognitive and socioemotional dimensions of LD may be independent.

Complex interactions between learning disabilities, personal strengths and weaknesses, and social histories may in fact make it difficult to establish explicit relationships of this nature. Polloway, Smith, and Patton (1984), taking a rare adult developmental perspective on the understanding of adults with LD, proposed that adaptation to various life events may depend on a combination of biological/intellectual variables, personal-social variables, and past experience and anticipatory socialization. They suggested that "if adults have learned to use strategies at an earlier point, they can apply them to new situations. This ability facilitates the decision-making process required to respond to life events" (p. 182). It appears that future studies of psychosocial adjustment of adults with LD must investigate multiple variables and ascertain the individual's repertoire of coping strategies to derive meaningful conclusions.

Family Life

Marriage and family life may also be affected by learning disabilities. Studies of the interpersonal relationships and marital patterns of adults with LD have produced variable results. The results of at least one study suggest that adolescents with LD may experience problems with dating (Vetter 1983). In Spreen's (1988) study, control group students were more likely to be sharing a residence with a

wife or husband (81.3 percent) than were LD students with soft neurological signs (45.8 percent) or with no neurological signs (66.7 percent).

Goodman (1987), on the other hand, found no significant difference in the marriage rate of women who experienced reading problems as children and that of their sisters. It is more difficult to make relative judgments regarding the rate of marriage reported in follow-up studies of adults with LD where no control group was used. Cobb and Crump (1984) reported that 45 of the 100 students with LD they surveyed at a mean age of 22.1 were married; this represented 87 percent of the group who lived on their own. This rate is difficult to assess without knowing comparable marriage rates for young adults in that community.

Lenkowsky and Saposnek (1978) focused on the family dynamics surrounding the presence of a spouse and parent with a learning disability. Their case study revealed an intricate web of dependencies that caused emotional stress for several family members. Goodman (1987) also called for further investigation of family dynamics surrounding the presence in a family of a child with LD, based on her finding of greater than typical use of psychotherapy and counseling services by the normal siblings used as a control group in her follow-up study. By and large, the impact of learning disabilities on family interactions remains an area in great need of investigation.

Vocational Adjustment

Considerable emphasis has been given to study and discussion of the adjustment of the adult with LD in the vocational arena. Despite results from outcome studies indicating that adults with LD often lead vocationally adequate lives supporting themselves and their families, the attainment of these goals often requires extraordinary effort, persistence, and resilience (Johnson and Blalock 1987). Most of the adults studied in Johnson and Blalock's clinic sample reported job-related problems. Based on their own study and analysis of previous studies, they suggested that job performance is impeded by the following factors: low reading levels, poor written language, feelings of inadequacy, fear of failure, attention disorders, and organizational difficulties. Underemployment was likewise reported to be a problem for individuals in a follow-up study of 21 students with LD conducted by Fafard and Haubrich (1981). Similarly, White et al. (1980) reported lower job status and job satisfaction for 47 adults with LD who had been out of school 1-7 years, when compared to 59 non-LD controls. The adults with LD and non-LD controls were found to be similar in many respects: salaries, time spent unemployed, number of friends, number living at home, frequency of contact with family, and convictions and time in jail. Dissimilarities included less involvement in recreational and social activities for the adults with LD and low satisfaction with parental relationships.

Both adults with LD and service providers (LD specialists and rehabilitation counselors) were asked about problems faced by these adults in getting and keeping jobs in a study by Hoffmann et al. (1987). Table 1 shows how their responses compared. At least two additional problems were perceived as important by 25 percent or more of service providers than were perceived by adults with LD. Similarly, consumers (members of the Association for Children and Adults with Learning Disabilities) and service providers

TABLE 1

TOP-RANKED PROBLEMS IN GETTING AND KEEPING A JOB

%	Adults with LD	%	Service Providers
41	Job application	49	Following directions
34	Where to find job	46	Job application
25	How to get job training	37	Interviewing for job
		31	Knowing where to find job
		27	Knowing how to get job

SOURCE: Hoffmann et al. (1987)

indicated overlapping concerns but differing priorities when identifying the greatest barriers to job success. (See table 2.)

Biller (1985, 1987) has written extensively on the lack of career preparation common among adolescents and adults with LD and has suggested application of Krumboltz's (1979) Social Learning Theory of Career Decision Making to understanding the career development needs of the learning disabled. He concluded from an analysis of 15 follow-up studies that four failed to provide enough data to evaluate the effect of LD on educational and occupational attainment, six did not support the conclusion that LD negatively affected attainment (Bruck 1985; Gottfredson, Finucci, and Childs 1984; Howden 1967; Rawson 1968; Robinson and Smith 1962; Vetter 1983), and five supported the belief that specific learning disabilities (SLD) restrict educational and/or occupational attainment (Carter 1982; Frauenheim and Heckerl 1983; Hardy 1968; Rogan and Hartman 1976; Spreen 1983). Biller cautiously drew conclusions from these studies, however, noting that only one used a sample that could be definitively identified as SLD on the basis of a consistently applied SLD formula.

Barriers found in the workplace represent another aspect of the career success problems of adults with LD. According to Lynn, Gluckin, and Kripke (1979), rigid academic requirements, inflexible apprenticeship tests, inappropriate application procedures, restrictive union requirements, and inflexible working conditions are examples of such barriers. Employer attitudes may provide another impediment to the successful employment of adults with LD. Minskoff et al.'s (1987) survey of 326 employers in 6 states found that 33 percent of employers said they would not knowingly hire a learning disabled applicant. Employers were more positive

TABLE 2

GREATEST BARRIERS TO JOB SUCCESS

%	Consumers	%	Providers
44	Academic problems	41	Social skills
34	Job-seeking skills	35	Academic problems
28	Social skills	34	Job maintenance skills
27	Job maintenance skills	30	Common sense
27	Job performance skills	27	Job-seeking skills

in their attitudes toward hiring and making allowances for employees with other handicapping conditions than they were in regard to the learning disabled worker. The authors speculated that these attitudes could be a reflection of employers' inexperience with learning disabilities, inaccurate knowledge, and lower levels of acceptance of handicaps that are invisible. These data suggest that employers may not be aware that Section 504 of the Rehabilitation Act of 1973 (P.L. 93-122) applies to persons with learning disabilities. That act stated that--

> no otherwise qualified handicapped individual shall, solely by reason of his handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

It has taken the years since 1977 when the final regulations for that law were issued for this legislation to exert an impact on availability of services for persons with LD in postsecondary education (Scheiber and Talpers 1987) and through vocational rehabilitation services (Biller 1987; Smith 1988). Staff development programs have been essential means of increasing the awareness of college faculty and rehabilitation counselors regarding the characteristics of the learning disabled and their rights to reasonable accommodations (Aksamit, Morris, and Leuenberger 1987). Similarly, programs to make employers aware of the capabilities of individuals with LD and of ways to provide support during their employment must be launched if significant changes are to occur for that segment of the LD population that has been identified as unemployed or underemployed (Macomber 1980).

The role of vocational rehabilitation services is crucial in coordinating postsecondary vocational training and job placement for the adult with LD (Scheiber and Talpers 1987). The interest of that group of professionals in the identification

and placement needs of the learning disabled was attested to by a special issue of the *Journal of Rehabilitation* ("Rehabilitation of Adults with Learning Disabilities" April-May-June 1984). Included in that issue was a report by Miller, Mulkey, and Kopp (1984) of a 50-state survey of vocational rehabilitation services related to LD. Striking at that time was the relative scarcity of LD clients over 25. With counselors surveyed averaging 18 LD cases, it seems appropriate and essential that 33 of 36 responding state offices reported some kind of staff development activity in this area.

ASSESSMENT

This section identifies key issues in the assessment of adults with LD and describes a number of assessment models. The question of screening versus diagnosis is examined, and guidelines for selection of diagnostic instruments are presented.

Issues and Models

If there is one caveat in the assessment of adults with learning disabilities, it might be that assessment is useful to the extent that it provides a means for helping the adult to live more fully. This criterion should be considered especially in the context of the adult previously unidentified as LD. Diagnosis can serve a useful purpose insofar as it determines eligibility for resources and support services that are not otherwise available to the individual. Additionally, a comprehensive diagnostic evaluation or reevaluation (in the case of the person identified at a younger age) can serve a viable function if it provides direction in working with the adult to determine future goals, select appropriate educational and career development programs, and develop strategies for an individualized intervention plan.

Given the scarcity of formal diagnostic tools appropriate for assessing adults with LD (Coles 1980; Ross 1987), it is even more imperative that formal testing instruments not be used in isolation, but rather be incorporated as part of a comprehensive assessment process. Vogel (1989) noted that the clinician should be trained in formal and informal assessment procedures, with sources of information including interviews, self-report, and direct observation. Vogel also noted that referrals for evaluation of adults are rarely made for the purpose of diagnosis alone, but also to develop a plan of action to enhance attainment of goals. The purpose(s) of the referral will to some extent influence the nature of the assessment process. Different procedures are appropriate for the community college (Best et al. 1986), vocational rehabilitation services (Newill, Goyette, and Fogarty 1984), or adult basic education programs (Hoy and Gregg 1984a-e), three of the primary adult education contexts discussed in current literature. In cases in which the adult has not been previously identified as having a learning disability, differential diagnosis becomes problematic across settings; an accurate history of medical, educational, and social influences on the learning problems may be hard to obtain and concomitant emotional problems may be difficult to rule out retrospectively as primary conditions.

Another unique feature of the assessment process for adults as compared to that of children is the increasing importance of the clinician-client relationship (Vogel 1989). The adult can be a valuable source of information regarding perceptions of personal strengths and weaknesses and regarding goals for the future. As a measure to reduce in part the negative

effects testing may have on the adult's self-esteem, Vogel suggested that the clinician shift the emphasis to information-seeking, discovery, and problem-solving aspects of the assessment process, an emphasis that requires the involvement of the adult in the investigative process.

Having identified several of the key issues in assessment of adults suspected to have learning disabilities, it is appropriate at this point to share several comprehensive models of assessment. Hoy and Gregg (1984a), in a guide to assessment for adult basic educators, stressed that appraisal and assessment must be ongoing and systematic. They proposed a seven-step evaluation sequence (p. 3):

1. Know why and for what the adult is being assessed.

2. Collect background information.

3. Interview the adult.

4. Observe and make a formal evaluation.

5. Organize and interrelate the formal and informal data.

6. Search for patterns of strengths and weaknesses.

7. Plan instructional strategies.

A goal of this sequence is the interpretation of input and output errors as a means of uncovering strengths and weaknesses. Hoy and Gregg stressed the importance of interviews between students and teachers as a source of otherwise unattainable information about the student, providing guidelines for structuring such an interview. They included in this discussion a list of instruments appropriate for assessment of cognitive abilities, language abilities, academic skills, written expression, and personality. In other parts of this series for ABE teachers, the authors specifically discuss assessment of reading, written language, and mathematics (Hoy and Gregg 1984b,c,d).

Johnson (1987) divided the assessment process into four key components: (1) current concerns and status, (2) history, (3) objective testing, and (4) clinical observation. She emphasized the importance of observing the adult as he or she completes the various tasks, which can be revealing in themselves. The individual's rate of processing and output, reactions to timed tests and fatigue, use of compensatory strategies, and recurring patterns across formal and informal tasks can be especially informative. Johnson also presented several principles to consider in the evaluation of achievement and cognitive processes. Tests and tasks should be designed to assess input, integration, output, and feedback modes, since processing difficulties may occur at any point along this chain. Because learners may vary in the affected modalities of learning (visual, auditory, haptic, and so on), an effort should also be made to assess intrasensory, multisensory, and intersensory learning responses. This assessment not only can indicate the weakest learning modalities but can also yield information about modality strengths, difficulties with sensory overload, and difficulties with translating information across modalities. Both verbal and nonverbal learning should be assessed, because an apparent modality strength or weakness may not affect verbal and nonverbal learning equally. For instance, knowing that a person who forgets his or her way spatially in familiar surroundings can nonetheless learn directions through maps written in words is useful to planning an intervention

program. Finally, Johnson recommended assessing both simultaneous and sequential processing. Johnson and Blalock's (1987) ***Adults with Learning Disabilities*** provides a general description of principles of assessment and diagnosis as well as separate discussion of assessment procedures used in a university-based clinic. Individual chapters are devoted to the topics of reading, written language, mathematics, abstract reasoning and problem solving, and nonverbal learning.

Assessment procedures at the Kingsbury Center (Zangwill and Greene 1986) are specially designed to assist adults whose coping strategies have failed after their initial successful transition from school to work. A comprehensive formal testing battery is used to assess intellectual and cognitive abilities and performance in the areas of reading, written language, and mathematics. In addition, the ***Myers-Briggs Type Indicator*** (Briggs and Myers 1983) and the ***Harrington-O'Shea Career Decision-Making System*** (Harrington and O'Shea 1985) help to clarify job-related abilities, strategies, and values. These standardized procedures are supplemented by informal assessment procedures, behavioral observations, and interviews to determine client concerns and coping limitations, present coping strengths, strategies that have been successful, and new situational demands requiring new strategies. Intervention planning then centers around specific coping strategies as well as remediation in academic or skills areas relevant to work or social requirements.

Newill, Goyette, and Fogarty (1984) provided an evaluation plan that is designed to be consistent with requirements for determining vocational rehabilitation (VR) eligibility. Because the VR program is based on eligibility rather than on entitlement, individuals with LD who have been formerly served in school systems may not be classified as eligible for VR services, unless there are indications that the learning disability has caused substantial handicap to employment (Vogel 1989). The Rehabilitation Services Administration also requires diagnosis by a physician or licensed psychologist; evidence for medical classification according to the ***Diagnostic and Statistical Manual of Mental Disorders*** (American Psychiatric Association 1987) or the ***International Classification of Diseases*** (U.S. Department of Health and Human Services 1980) is necessary to determine eligibility even though the VR definition is in terms of functional deficits (Biller 1985; Vogel 1989). The complexity of this process of determining eligibility suggests an elaborate evaluation model, such as that proposed by Newill, Goyette, and Fogarty (1984).

The first phase of the model is referred to as preliminary assessment; it includes a detailed client history (family background, medical, interpersonal, psychological, educational, and vocational factors), behavioral observations, and review of school records. The next phase, the formal diagnostic process, includes a medical history and examination, psychoeducational evaluation, and vocational assessment. The psychoeducational evaluation assesses intellectual ability, achievement, and personality functioning. Finally, Newill et al. suggested that the vocational assessment should be conducted in many forms at several levels. First, client goals are determined, then a preliminary determination of vocational aptitudes and strengths is made. The next step should involve formal assessment of both vocational aptitude or interest, including a diagnostic vocational evaluation using simulated work samples. Diagnostic guidelines can

then be applied based on the following criteria: (1) IQ of at least 80, (2) significant lags in achievement, (3) no evidence of primary emotional disturbance, and (4) no evidence of visual, auditory, motor, or mental deficiency causing the learning disability. Finally, the qualified examiner must make a clinical judgment as to the presence of SLD based upon results of the recommended procedures.

The final assessment model presented here is described in the replication manual of Project MEAL (Model for Employment and Adult Living), supported by the Office of Special Education and Rehabilitative Services (Crawford, Crawford, and Faas 1987). Evaluation for that program included psychoeducational evaluation and assessments of preferred learning style (Brown and Cooper 1983), cognitive style (modality preference), social style (preference for working alone or in groups), and expressive style (oral or written). Also included in the assessment process were a career ability placement survey, a vocational evaluation using various interest inventories, a work personality assessment, and, in some cases, work sample tests.

Screening versus Diagnosis

Although the procedures described here are recommended as appropriate for comprehensive diagnostic evaluation, a number of more abbreviated procedures--ranging from checklists to specially designed tools--have been suggested for screening purposes. Scheiber and Talpers' (1987) book, ***Unlocking Potential***, is a rich source of checklists that can be used by instructors in a variety of settings, as well as a Learning Channel Preference checklist by Lynn O'Brien designed for use by the learners themselves. The Screening Test for Adult Learning Difficulties (STALD) is an instrument designed to be administered in 35-45 minutes by supervisors, adult education teachers, or volunteer tutors (Montgomery 1986). This instrument has sections that focus on perceptual screening, word identification, and reading passages; it includes a remediation chart matching specific STALD errors to materials and methods. Such a tool can be useful for providing clues to remediation in the adult basic education or literacy settings in which complete evaluations are seldom possible. It may also help relatively untrained teachers or tutors identify alternative instructional strategies for students who may or may not have specific learning disabilities.

The major risk in the use of such screening instruments, however, is an inappropriate diagnosis of learning disability. Controversy followed the development and use of Weisel's London Procedure (Coles 1980), another instrument that took only 45 minutes and no special training to administer. O'Donnell and Wood (1981) questioned the use of that instrument to identify 95 percent of ABE students in Cleveland, Ohio, as "problem learners." They based their concern on the fact that the instrument was assembled using subtests from tests of perceptual processing in children--tests that were questionable according to accepted measurement criteria even when used with the intended population. This critique should signal the danger of using any single instrument, particularly one that may be interpreted by untrained administrators, as an indication of "diagnosed" learning disabilities.

The use of abbreviated screening procedures to identify adult populations as learning disabled for research purposes is a similarly questionable practice, one that

seems especially prevalent in studies of adult inmates. Lundak (1988), for example, recently used the ***Detroit Tests of Learning Aptitude (DTLA)--Revised*** (Hammill and Bryant 1985) to conclude that 60 percent of a prison population exhibited learning disabilities. Tevis and Orem (1985) administered the ***Revised Beta*** (Kellogg and Morton 1978), the ***Wide-Range Achievement Test*** (Jastak and Jastak 1984), and the DTLA to inmates, concluding that all 30 of the inmates with an IQ of 85 or above could be considered learning disabled in one or more areas using their criterion of a range of 2 or more years on the DTLA. In a national study "on the nature and prevalence of learning deficiencies in adult inmates" conducted by Bell, Conrad, and Suppa (1984), 1,000 inmates in 3 states were tested. For the purposes of this study, any subject found to be functioning at or below the fifth-grade level on the ***Tests of Adult Basic Education*** (1976) was considered to be learning deficient. The authors concluded that 42 percent of the sample exhibited learning deficiencies. When the ***Wechsler Adult Intelligence Scale*** (Wechsler 1981) and the ***Mann-Suiter Learning Disabilities Screening Test*** (Bell, Conrad, and Suppa 1984) were administered, 25 percent of the sample and 82 percent of the learning deficient group exhibited symptoms of a learning disability. The authors suggested appropriate discretion in interpreting the results of this screening test, and they can be commended for including intelligence, achievement, family background, and educational history data in their screening battery. Nonetheless, the need for reasonable caution becomes imperative in the face of a growing number of studies attempting to use screening measures to determine prevalence in samples of previously undiagnosed adults. Because of far-reaching implications for adults diagnosed as LD, adequately funded research to permit appropriate diagnostic procedures is needed. Only as a result of such research can reliable prevalence estimates in specific subpopulations of adults, such as in penal institutions, be obtained.

Selection of Diagnostic Instruments

A variety of instruments have been used in the assessment of adults with LD. An attempt is not made here to provide a comprehensive list of formal tests. Rather, several guiding principles are suggested for consideration in test selection. Also, several of the most frequently used and reliable instruments are mentioned by name. Additional instruments and assessment procedures are provided by Johnson and Blalock (1987), Scheiber and Talpers (1987), Hoy and Gregg (1984a), and the Educational Testing Service (1986). A special focus on procedures for assessing various aspects of career development can be found in Biller (1987). For those interested in assessing learning strategies, the publications list of the Kansas Institute for Research in Learning Disabilities will be valuable.

In selecting instruments for evaluation of adults suspected to have learning disabilities, the reader is advised to consult one of the standard guides to measurement and evaluation such as the ***Tenth Mental Measurements Yearbook*** (Conoley and Kramer 1989). Such a guide will indicate whether the test norms apply to an adult population, one of the key limitations regarding many of the commonly used diagnostic instruments. Reading reviews of the tests' reliability and validity found in the measurement guides is also important to gain insight into the confidence that can be placed in the test's results. For older adults, the issue of timed tests

needs to be considered; documented slowing of perceptual speed with age (Knox 1977) may place them at a disadvantage unrelated to any learning disability. Although certain tests may be selected for the purpose of assessing performance under timed conditions, this age-related factor suggests limited use of such tests. Diagnostic strategies should be planned carefully to minimize the amount of testing necessary for adults. Many will experience self-esteem and confidence problems that, if exacerbated during extensive testing, may affect overall performance. Finally, the input given by adults during the intake interview can provide valuable information relevant to the selection of those tests that seem appropriate to measure performance in those areas for which he or she has greatest concern. When duration of testing time becomes a critical factor, the adult's self-perceived goals, strengths, and weaknesses can enhance clinical judgment in the selection of only the most necessary tools. Table 3 lists several of the most frequently cited instruments.

TABLE 3

INSTRUMENTS FOR ASSESSING ADULTS WITH LD

Instrument	Measures
Wechsler Adult Intelligence Scale--Revised (Wechsler 1981)	Intellectual ability
Woodcock-Johnson Psychoeducational Battery (Woodcock and Johnson 1977)	Cognitive and achievement
Wide-Range Achievement Test (Jastak and Jastak 1984)	Academic achievement (screening)
Tests of Adult Basic Education (1984)	Academic achievement
Gray Oral Reading Tests--Revised (Wiederholt and Bryant 1986)	Reading
Peabody Picture Vocabulary Test--Revised (Dunn and Dunn 1981)	Oral comprehension
Coopersmith Self-Esteem Inventory (Coopersmith 1981)	Self-esteem
Halstead-Reitan Neuropsychological Test Battery (Reitan 1981)	Neurological status (soft signs)

INTERVENTION

Once learning disabilities have been diagnosed, remediation methods must be selected. This section describes strategies for intervention, with a look at some specific programs. The place of these interventions in adult education settings is examined, and principles to guide their use with adults are listed.

Intervention Approaches

In a discussion of current trends and future issues for intervention approaches with individuals with learning disabilities, Smith (1986) recommended that for clients as young as the teen years intervention efforts should focus on how to help them live with their disabilities instead of focusing solely on trying to make them "unlearning disabled." She noted: "Remedial instruction in reading, mathematics, written language, and survival skills are the customary interventions. Only recently have we become aware that far more is needed in order to enhance strengths, compensate for persisting weaknesses, select realistic goals, and promote adult social and vocational adjustment" (p. 406). Although her comments focused most specifically on interventions for adolescents with LD, the same might be said in speaking of intervention approaches for adults with LD.

Intervention approaches used with adolescents and adults can also be categorized according to the primary goals of the approach, including basic skills remediation, subject-area tutoring, compensatory modifications, cognitive or learning strategies training, instruction in "survival skills," and vocational exploration and training (Johnston 1984). The more typical approaches seen in ABE and literacy settings (not necessarily restricted to learning disabled populations) can be described as remedial. Instruction begins at approximately the current achievement level, most often focusing on reading, math, and writing skills, with the intent of improving levels of performance through individualized instruction. Many previous discussions of teaching reading to the adult with LD share an emphasis on remediation (Bowren 1981; Gold 1981; Idol-Maestas 1981; Peterson 1981). These discussions vary in the techniques suggested and the relative emphasis on decoding (and perceptual learning disabilities) versus comprehension-based instructional strategies. Some of these authors have reported dramatic gains in reading skills. There is a danger, however, that adults with LD entering programs relying solely on remedial approaches may become discouraged and drop out when they see limited progress. Their frustration may be even greater when a teacher-directed, traditional diagnostic-prescriptive model is followed and they are not involved in selecting relevant goals as adult learners should be (Hamilton 1983).

In another approach often observed in secondary, college, and sometimes

vocational training settings, compensatory strategies are developed (Johnston 1984). Literature on compensatory approaches seems to address two distinct methods of compensating. Most prevalent is an emphasis on changes in the environment or conditions for learning (Hill 1984; Lean 1983), whereas another emphasis is on assisting the learner to develop alternative means of accomplishing a goal (Love 1985). Although compensatory techniques are rarely used as the only form of intervention, Johnson and Myklebust (1967) long ago recommended a combined approach of remediating areas of weakness while teaching skills through stronger learning modalities. This result seems to be the intent when suggestions are made to teach an auditorially deficient student as a visual learner, thus relying on the stronger modality. The practice of compensatory techniques is observed in college programs for students with learning disabilities that facilitate reading disabled students' access to taped texts and that assist students and instructors in implementing modifications such as administration of oral exams (Mangrum and Strichart 1984). Other compensatory techniques include use of a typewriter or computer by those with handwriting difficulties and use of a calculator. With such techniques, students with severe reading disabilities have been able to graduate from college. Although some express concern that compensatory approaches do not place enough responsibility with the student for improving his or her own learning strategies, it is possible for the adult with LD to be actively involved in selection and development of compensatory techniques. The wide range of compensatory or coping strategies exhibited by successful adults with LD suggests that the ability to develop or select compensatory techniques can be highly adaptive. Smith (1986) commented as follows:

> Despite persistent weaknesses, some go on to postsecondary education, hold good jobs, provide good models for their children, get along with their spouses and friends, and contribute to the betterment of their communities. With the help of adequate intelligence, specific learning abilities, motivation, instructional opportunities, emotional strengths, and support, these adults seem to have remediated some weaknesses, compensated for others, and found alternate routes to success. Which of these factors was the most influential, however, remains to be clarified. (p. 466)

In the tutorial intervention model, a current learning need is addressed by providing direct assistance to the individual with LD in mastery of particular content (Johnston 1984). This model, common in the secondary school learning disability support program, is probably more relevant to GED and workplace learning than to ABE and other adult education environments. It is expedient when the aim is to enable the learner to master a given subject matter to meet a specific and limited goal. For instance, the tutor/instructor might help the student learn vocabulary and text reading strategies specific to a welding course or to the Social Studies section of the GED test. A concern expressed by Deshler et al. (1984) is that the learner taught using the tutorial model is not taught how to learn independently of the tutor. Thus, this intervention model does not optimally foster the self-directedness seen as a goal for adult learners (Brookfield 1986; Knowles 1980).

Another model that has been successfully applied with adolescents with LD is that of learning strategies development (Deshler et al. 1984). This approach is based on the assumption that one of the problem areas for many with LD is a lack of cognitive strategies such as planning and problem solving. Those who advocate this approach maintain that it uniquely prepares the learner for dealing with future learning situations. Although reports of learning strategies training with adults outside the college setting are rare (Tindall 1984), this kind of approach is highly consistent with adult education philosophy and with the work of Smith (1982) and others on "learning to learn" approaches for adult learners in general.

Two intervention approaches appearing in programs for adolescents with LD appear primarily focused on adaptive functioning for adult life roles. The functional curriculum model (Johnston 1984), which emphasizes instruction in "survival skills," attempts to help individuals with LD get along in the world outside of school. Topics of interest include consumer information, banking and money skills, life care skills, and job seeking. This model can be found in many ABE programs, although it is not specifically designed for learning disabled adults. Another model emphasizing adult life roles is referred to as the work-study model at the secondary level (Johnston 1984). For adults, a related model is found in workplace literacy, employment training (Crawford, Crawford, and Faas 1987), or postsecondary vocational education programs.

No single approach has been demonstrated as ideal. In fact, many successful programs for adults with LD combine two or more approaches. Vaugh (1985) described Project ABLE, a Connecticut program designed for adults with LD in which both remedial and compensatory approaches are combined effectively. Likewise, Swan (1982) described a combined approach using remediation, compensatory techniques, counseling, and consultation with family members of teachers who need assistance in understanding the adult with learning disabilities.

Specific Intervention Programs

A closer look at several intervention programs may enhance understanding of ways in which varying approaches can be combined to develop a more comprehensive model for service to adult populations. One such program was reported by Adamson, Ohrenstein, and Fiederer (1984). The multidimensional program they describe was provided by Group Growth Services to eight young men with LD and their families. The services provided included the following:

- Group psychotherapy
- Concurrent group sessions for parents
- Group socialization and recreation experiences
- Individual psychotherapy
- Individual parent or couple counseling
- Active liaison with community vocational services
- Active tutoring, technical training, and formal classroom learning
- Cooperative learning and life survival skills training

This multidimensional program was developed and delivered by an interdisciplinary team composed of a social worker, an educational psychologist, a special education teacher, a physical education teacher, a language development specialist, and psychiatrists.

Project Meal (Model for Employment and Adult Living), offered by the Life Development Institute (Crawford, Crawford, and Faas 1987), is an example of a program for unemployed adults with LD. The program provides a comprehensive model of training and support services linking members of the target population to available community training/education programs and services. Among the components of this service delivery model are "linkages between local education agencies and providers of services for learning-disabled adults' provision of educational vocational career assessment; assistance for clients in developing job readiness, skills, specific job skills, and independent living skills; and job placement services" (Crawford et al. 1987, p. 1). An Individualized Education, Training, Employment Plan (IETEP) is developed for each client, identifying rehabilitation needs, goals determined by a case manager, treatment period and responsibility, specific service goals, anticipated dates for accomplishment of goals, and procedures to determine effectiveness of services. Core training program competencies are assessed using a rating scale with categories related to health, grooming, and attire; personal and social adjustment; financial/transportation; practical law; home and community living; and job development and placement.

At the Night School of the Lab School of Washington ("Are You a Learning Disabled Adult?" n.d.), students are permitted to select three courses from a curriculum that is offered 2 nights per week. In addition to courses in reading, math, English, composition, or literature, students can elect such courses as Life Management Skills, Study Skills for College Needs, GED Preparation, or Job-Seeking Skills. Classes of five or six students are taught by experienced LD teachers. Seminars are also offered on strategies for learning, stress and time management, and organizational skills. Thus, what appears to be a fairly traditional course format actually reflects a multifaceted intervention approach.

Reported here is just a sample of the many programs developed for adult students in a variety of settings. Federal funds through Section 353 of the Adult Education Act, the Carl D. Perkins Vocational Education Act, the Rehabilitation Services Administration, and the Office of Special Education and Rehabilitative Services have in recent years stimulated the growth of a wide range of responses to the education and training needs of adults with LD. Section 504 of the Rehabilitation Act of 1973 also provided an impetus for the development of programs, since it banned discrimination against persons with disabilities in education, employment, and social services for any programs or activities receiving federal monies. Regulations for Section 504, written in 1977, spell out the necessity for reasonable adjustments to permit admission and participation of handicapped individuals. Section E of the regulations describes ways of making postsecondary education accessible to disabled students. These include modifications "as are necessary" to ensure that academic requirements are not discriminatory, exams that evaluate actual achievement rather than reflect the student's impaired sensory, manual, or speaking skills, and use of auxiliary aids such as

taped texts (Scheiber and Talpers 1987, p. viii). This act has had a great influence on practices in colleges serving young adults with LD. Educators in a number of adult education settings have not yet been sensitized to the implications of this act. This noticeable information gap among ABE staff is evident in at least one study of staff development needs (Ross and Smith 1990). It is likely that the quantity and diversity of intervention programs for adults with LD will be increased as more individuals working in adult education settings become aware of the implications of this act. New legislation, pending at the time of this writing, is likely to provide additional mandates regarding the rights of persons with disabilities and may spur further efforts to develop intervention programs.

Adult Education Contexts and the Adult with Learning Disabilities

Attention to particular settings for adult education is evident in literature to date. The vast majority of literature on individuals with LD beyond high school age has focused on the higher education setting (Cordoni 1982; Liscio 1986; Mangrum and Strichart 1984; Moss and Fox 1980; Vogel 1982, 1985). Although the experience of this writer suggests that individuals with LD, including some who find their way to support services, are included in the population of nontraditional age students in higher education, this population has not been discussed separately in the literature. Rather, all postsecondary students with LD are typically referred to as adults. For the adult educator who is interested only in those students in higher education who might be considered nontraditional on the basis of age or nonstudent life roles, determining the specific needs and characteristics of people with learning disabilities who meet that distinction is currently almost impossible.

Discussion and research focusing on postsecondary vocational education and vocational rehabilitation of adults with learning disabilities have also increased significantly during the last decade (Biller 1985, 1987, 1988; Brown 1984; Butler 1984; Geist and McGrath 1983; Hursh 1984; Miller, Mulkey and Kopp 1984; Sheldon and Prout 1985). Interest in the adult with learning disabilities participating in adult basic education was strong early in the 1980s (Bowren 1981; Gold 1981; Peterson 1981) and appears more recently as a focus of staff development for ABE staff and literacy tutors (Edwards and Bell 1985; Hebert, Gregory, and Weyerts n.d.; Meindl 1988; Ross and Smith 1990). A final area of high interest has been LD in the corrections population (Bell, Conrad, and Suppa 1984; Kender, Greenwood, and Conrad 1985; Koopman 1983). Relatively little interest has been shown in the adult education of individuals with LD in other settings. However, they may be found learning in the workplace (Lean 1983; Macomber 1980), the community, the church, and the military; through professional and voluntary associations; and even as self-directed learners. As understanding of the educational needs of adults with LD increases, no doubt they will be found engaged in learning in all the contexts in which other adults learn.

One of the obvious implications of the presence of adults with learning disabilities in a myriad of adult learning circumstances is the need for staff development to increase adult educators' awareness and understanding of this population. If adult educators are to work effectively with learning disability specialists, psychologists, rehabilitation counselors, employers, and

others interested in the success of these adults, professional development activities will be needed to prepare those who have had little or no training in this area. In a survey of ABE personnel in the state of Pennsylvania (Ross and Smith 1990), more than two-thirds of the 306 respondents expressed an interest in inservice training relating to the characteristics of LD and to appropriate teaching methods. Similarly, college faculty and rehabilitation professionals have expressed interest in staff development relating to learning disabilities (Aksamit, Morris, and Leuenberger 1987; Miller, Mulkey, and Kopp 1984). Professionals in job training, human resource development, military education, and other adult education contexts have not been surveyed, but are likely to be in need of similar staff development. In the case of literacy instruction, such training will be important for volunteers as well as professionals, and some programs have been developed to respond to that need (Edwards and Bell 1985; Meindl 1988).

Principles for Educational Intervention

Detailed suggestions of educational strategies for a variety of specific learning disabilities can be found in several sources (Gajar 1986; Hebert, Gregory, and Weyerts n.d.; Hoy and Gregg 1984b,c,d; Tindall 1984). Persons responsible for instruction of adults with learning disabilities are encouraged to consult these sources. For the purposes of this paper, a brief list of generalizable principles for instruction drawn partially from these sources is included.

1. When delivering group instruction, use multisensory strategies to reach multiple perceptual learning styles. Also provide opportunities for concrete and experiential learning as well as abstract and reflective learning.

2. Assess individual learning style and where possible teach new material through the stronger learning modality or style.

3. Talk with the student about what techniques work best for him or her.

4. Use language experience approaches and reading materials from the home and work environment to stimulate interest.

5. Teach for success. Break lessons or tasks into manageable parts.

6. Provide structure and orderliness. Help the learner identify organizational patterns.

7. Make directions specific, concrete, and understandable.

8. Make clear transitions from one topic or task to another.

9. Help set realistic goals.

10. Give positive and explicit feedback.

11. Teach such transferable learning strategies as listening, paraphrasing, SQ3R (Survey, Question, Read, Recite, Review), error monitoring, notetaking methods, sentence combining, paragraph organizing, and so on.

12. Teach such compensatory techniques as tape recording lectures, using a word processor, taking alternative test forms, using computer-assisted instruction, and so on.

13. Help students develop "cheat cards" that list steps to be followed in math problems with multistep tasks.

14. Teach memory techniques such as chunking and mnemonics.

15. Help students recognize how success results from their efforts, building on strengths rather than repeating weaknesses.

TOWARD AN AGENDA FOR THE FUTURE

As adult educators develop policies and research models for working with adults with learning disabilities, they must become aware not only of existing frameworks for assessment and intervention but also of critical viewpoints within the field. Carrier (1986) offered a view of learning disabilities as largely a socially constructed category used initially to account for the educational inequality of children who were victims of social inequality, and then adopted by the parents of middle-class children looking for a more desirable term than "slow learner." Poplin (1984) criticized the emotionally damaging deficit focus of the field of learning disabilities, calling instead for an approach that seeks to maximize the learning abilities and talents of individuals with LD. Concern also has been expressed in recent years about the growing numbers of children classified as learning disabled within the schools (Hallahan, Keller, and Ball 1986; McGuinness 1986; Tugend 1985). Although variability in operational definitions of learning disability and questionable assessment tools may be partly to blame, some allege that elements of subjectivity in assessment procedures also play an important role in determining who is identified as learning disabled (Algozzine and Ysseldyke 1986). Others point to the lack of agreement in the field of learning disabilities over what intervention techniques should be used and the lack of empirical validation of the effectiveness of many of these techniques (Forness 1988; Poplin 1984).

In a chapter on the future of learning disabilities, Forness (1988) noted continuing disagreement among experts in the LD field on such basic issues as definition, classification, age of onset, prevalence, and need for differential programming. He stated: "Perhaps even more daunting is the fact that the future of learning disabilities threatens never to arrive. Controversial issues such as definition, subtypes, discrepancy, prevalence, remedial approaches, early identification, and the LD adult often seem no closer to resolution than they did two decades ago" (p. 206). Forness nonetheless accepted the task of identifying current trends in the field, several of which he saw as promising improved identification and intervention. So too the adult educator interested in the adult with LD is often challenged to make sense of two fields still in the process of paradigm formation and must continue to search for the most effective solutions possible with current knowledge.

Policy Development

The need to establish policy goes beyond the concerns of the individual adult educator deciding how best to assist the individual adult with learning disabilities. Lieberman's (1987) question, "Is the LD adult really necessary?" must be answered. If the answer is "yes, sometimes," adult educators, along with many in the fields of special education, higher education, and

vocational rehabilitation, must decide how to create provisions for equitable and least-restrictive responses to these adult learners' educational needs. The discussion must also include conceptions of adult learning theory (Knowles 1980; Merriam 1988), adult development (Cross 1981), learning styles (Bonham 1988), and learner involvement in the educational process (Rosenblum 1985).

In formulating policies regarding programming for adults with learning disabilities, it may be helpful to examine policies and practices developed in other countries. Gerber (1984) compared the United States to the Netherlands, where relatively few services for adults with LD are extended into adulthood. Examining practices in Denmark, Gerber found greater availability of services despite a policy of "normalization of handicapped persons," in part because of greater general support for social services. Adults with LD in Denmark can register for special education courses in reading, spelling, and math offered by Danish adult education programs or may attend institutions like the Wordblind Institute, which offers intensive courses to 160 adults with learning problems (Dysseegaard 1985). In West Germany, competition for industrial training opportunities or training in the apprenticeship market leads many persons with LD to seek training through government-sponsored vocational centers providing on-the-job training for disabled persons (Bleidick 1985). Such centers provide comprehensive social-educational assistance, including medical and psychological care, recreational activities, social services, and vocational training. Only about 5 percent of the LD population can be served, however, in the 37 existing centers.

An advisory committee on educational opportunities for adults with learning disabilities in British Columbia recommended the following multipronged program of action (British Columbia Department of Education 1984):

- Funding voluntary associations for children and adults with learning disabilities
- Funding a training and development program in adult learning disabilities for policy makers, administrators, counselors, and instructors
- Providing comprehensive educational services for all adults with learning disabilities by colleges and universities in the regions in which they reside
- Establishing a system for the interinstitutional coordination of services of adults with learning disabilities
- Providing specialized assessment, diagnostic, and prescriptive services for adults with LD
- Allocating the necessary funds to ensure the development and delivery of such services

In describing the need for such a comprehensive plan, the report from this committee provided the following rationale:

> The price of failing to provide adequate service for this sector of the adult population would be high. Significant numbers of people would not attain their educational potential, would not become the productive citizens they could be, and would not achieve personal or social satisfaction in their lives. The costs of continual re-entry and retraining

> of adults with learning disabilities without adequate support in the educational system are prohibitive and wasteful. Not only are these adults limited by an inadequate level of service, but also society at large shares in the loss of their human potential. (p. ii)

Policy makers in the United States may find it valuable to consider the preceding statement when debating levels of support to programs serving adults with learning disabilities or other disabilities.

A National Joint Committee on Learning Disabilities (1986) recently met to identify key issues related to adults with LD. It developed a list of eight concerns to be addressed (p. 164):

1. Persistence and pervasiveness of learning disabilities.
2. Scarcity of appropriate diagnostic procedures for adults.
3. Denial of access of older adolescents and adults to appropriate services.
4. Scarcity of adequately trained professionals.
5. Lack of awareness/knowledge/sensitivity on the part of employers.
6. Personal, social, and emotional difficulties adults with LD face in adapting to life tasks.
7. Inadequate advocacy efforts.
8. Lack of federal, state, and private financial adult program support.

Following discussion of these issues, the committee made nine specific recommendations (pp. 164-165):

1. Initiate programs to increase public and professional awareness of manifestations and needs.
2. Increase understanding of how an adult's condition influences learning in order to select appropriate educational and training programs.
3. Provide access to a range of programs and service options in early years to prepare for eventual transition to secondary and postsecondary programs.
4. Provide alternative programs for adults with LD who have failed to obtain a high school diploma.
5. Allow adults with LD to assist in planning postsecondary or vocational efforts.
6. Develop and implement (by federal, state, and local agencies) programs to assist adults with LD in attaining career goals.
7. Develop systematic research programs focusing on status and needs of adults with LD.
8. Develop and incorporate curricula relating to adults with LD in professional (education, counseling, social work, psychology, medicine, law) preparation programs.
9. Increase awareness of mental health professionals regarding the unique difficulties of persons with LD throughout their lives.

Although most of these recommendations relate to development, funding, and provision of educational programs and services for adolescents and adults with LD, several recommendations clearly focus on improving the knowledge and attitudes of the general public and appropriate professionals. A missing group that seems also to be important to the improved situation of adults with LD is the family. Parents, spouses, children, and other significant family members may play a critical role in support of adults' efforts to function with responsibility for themselves and others in adult roles. It is also worth noting that the list of education professionals who need improved preprofessional and continuing professional education regarding the adult with LD should definitely include those acting as adult educators, whether by title or role.

Research Needs

The list of recommendations put forward by the National Joint Committee on Learning Disabilities indicates an awareness of the need for systematic research programs focusing on status and needs of adults with LD. Although such programs are bound to be plagued by the controversies that still exist regarding definition, identification, classifications, and preferred interventions, they are nonetheless essential. In October 1983, the National Institute of Handicapped Research (NIHR) released its report on a meeting on the special rehabilitation needs of adults with learning disabilities (Gerber and Mellard 1985). The meeting brought together professionals from the fields of learning disabilities and rehabilitation to formulate a proposed research agenda for the adult with LD. Three concept papers were written prior to the meeting and disseminated to the 25 conference participants invited because of their contributions to the fields of learning disabilities and rehabilitation. A multiattribute utility measurement statistical technique was used to identify priority items for research from the issues generated during the conference. A list of 17 tentative priorities was generated, and items were rated according to the following dimensions--impact, practicality, generalization of outcomes, target populations, and potential for stimulating research. The final ranking of priorities, after the multiattribute utility measurement procedure, was as follows:

1. Identify the condition of individuals with LD at adulthood. Identify the subgroups and where they are located, determine severity factors, and how professionals should work with multihandicapped individuals who have a learning disability.

2. Determine what social skills are at issue for adults with LD.

3. Identify the vocational skills that are at issue for adults with LD.

4. Conduct a state-of-art study to determine what programs exist for adults with LD.

5. Establish definitions of community adjustment. Determine which ones apply to adults with LD.

6. Develop strategies for involving the family in order to help remedy the problems facing adults with LD.

7. Identify and investigate the setting demands in postsecondary training. (p. 65)

This list of research priorities was obviously influenced by the composition of the committee, which included rehabilitation and learning disabilities professionals. A more diverse multidisciplinary team might identify additional issues or rank the research issues differently. For instance, items appearing farther down on the lists for this group included topics focusing on involvement of the family, effect of self-help groups, and improving interagency linkages. To this list of research needs could be added the following:

1. Investigate relationships between adult outcomes and (a) severity of LD, (b) LD subtypes, (c) age at diagnosis, (d) years of intervention, and (e) forms of intervention.

2. Investigate self-directed learning efforts of "successful" adults with learning disabilities and identify learning strategies they use to compensate.

3. Investigate family coping strategies for nonindependent LD adults as a step toward developing models for family intervention.

4. Investigate the impact of employer training programs on willingness to hire employees with learning disabilities and readiness to make reasonable accommodations on the job.

5. Identify staff development needs of adult educators employed in a variety of settings likely to serve significant numbers of adults with learning disabilities, for example, adult basic education, vocational-technical schools, community colleges, university continuing education programs, and so on.

SUMMARY AND CONCLUSIONS

A review of the literature on adults with learning disabilities reveals a great deal of interest in this topic among professionals in several fields. The volume of literature and quality of research have improved during the last decade. Based on current information, the time is right to expand programs and research in this area. Given many unresolved debates in the field of learning disabilities generally and specific questions arising regarding the adult with learning disabilities, expansion of programs must be carefully planned. Consideration must be given to each learner's individual profile of learning strengths and weaknesses in light of the anticipated benefits of particular service models and possible negative outcomes from labeling and unavailable or ineffective services.

Current literature reveals a great many things about the kinds of problems that may persist from childhood for the individual with LD. It also suggests that many adults with LD lead successful and productive lives. Program planning must take into account the individual's learning strengths in terms of abilities, past experience, and social networks. To minimize psychological damage, it is essential to move away from a deficit focus and shift toward identifying talents, skills, and resources that can be mobilized to ensure success in adult life.

A holistic approach is required to assist individuals with LD in learning for adult life. Just as educators of youth with LD have recently come to realize that teaching to improve isolated psychological processing abilities has limited direct effect on academic performance, it is important to realize that, for adults, an emphasis on improving academic skills may have limited direct effect on performance in life roles. Some individuals with LD will require intervention strategies focusing on further training and education in a traditional sense. Often, however, their needs will not be limited to assistance with completing the academic or training program. Comprehensive programs, especially for individuals with LD of average to low average ability, need to focus as well on developing strategies related to independent living, career development, and social interaction in the family. Counseling and/or support groups will in some cases be needed to repair psychological damage done in earlier years.

Such a holistic and comprehensive approach requires the involvement of many types of professionals. Special educators, adult educators, higher education professionals, vocational rehabilitation specialists, and vocational educators will all find themselves working with adults with LD. As such, staff development will be needed for all these groups. It is also important that educators maintain linkages with physicians, psychologists, social workers, and other professionals who bring expertise that is

needed to provide comprehensive intervention programs and conduct interdisciplinary research. Interagency cooperation, currently emphasized in school-to-work transition programming, must become a hallmark in all areas of service to adults with LD. The adult with LD must also be recognized as a critical member of the planning team, not someone to receive a "prescription" passively. In this light, self-help groups such as Time Out to Enjoy, The Marin Puzzle People, and local Learning Disabilities Association of America (LDAA--formerly ACLD) chapters can play a vital role in program planning and participatory research efforts.

There is an obvious need for expanded research on the needs, preferences, and outcomes for individuals with LD identified at various points in their lives and learning in a variety of settings. The research agenda developed at the 1983 NIHR meeting (Gerber and Mellard 1985) provides a starting point. Broad-based interdisciplinary teams are needed to plan the kind of research that will be most valuable. Adult educators should be included in invitational meetings of this nature so that they too can provide input into a comprehensive research agenda.

One of the pressing issues for the improvement of the quality of research is greater standardization of procedures for sample selection. Using school-identified adults with LD, with the exception of follow-up studies of specific school populations, introduces extraneous variance due to the wide differences in application of identification guidelines. Use of abbreviated diagnostic procedures as part of a research project raises additional questions when such procedures may become the basis of labeling (or mislabeling) without subsequent intervention.

This literature review makes it clear that the challenges are many for those who wish to conduct research on adult education for the adult with learning disabilities. The rewards for learner and professional can be many, but risks to the learner must also be considered. Research and professional practice should be guided by the aim of enhancing the lives of those adults who find greater benefit than harm in being identified as learning disabled. At the same time, we must continually work to recognize and affirm their learning abilities and talents as well.

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